

DIELECTRIC LAYER FOR SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

ABSTRACT

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A multi-layer dielectric layer structure for a semiconductor device. The multi-layer dielectric layer structure comprises a silicate interface layer having a dielectric constant greater than that of silicon nitride and a high-k dielectric layer overlying the silicate interface layer. The high-k dielectric layer comprises one or
10 more ordered pairs of first and second layers. With the present invention, the dielectric constant of the high-k dielectric layer can be optimized while improving interface characteristics. With a higher crystallization temperature realized by forming the multi-layer structure, each of whose layers is not more than the critical thickness, leakage current can be reduced, thereby improving device performance.

15